Air Traffic Flow Management Requirements and Functions

TFM Job Functions
Analyze the impacting conditions

- ✓ Sector loading points (arrival/departure fixes, choke points)
- ✓ Sector demand (peak hours)
- ✓ Sector flows (route/altitudes)
- ✓ Location of delays (by sector and airport)
- ✓ WX forecasts and pilot reports (PIREPs)
- ✓ Other FIR's

Traffic Flow Management

TFM Job Functions
Develop a plan of action

- ✓ Collaborate (CDM) with affected facilities.

- ✓ Collaborate with the customer.

- ✓ Collaborate with the Supervisor and others.

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TFM Job Functions
Implement restrictions as needed

✓ Least intrusive

✓ Minimize impact, maximize efficiency (MIME)

✓ Advanced notice when able

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TFM Job Functions
Monitor the facility system

- ✓ Use the Facility Display Systems (RADAR/Weather Products)
- ✓ Count the numbers
- ✓ Review Traffic Data
- ✓ Direct observation
- ✓ Communicate with the Supervisor/Controllers

Traffic Flow Management

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TFM Job Functions

Document appropriately (tell the story)

- ✓ Traffic Management Log
- ✓ Other Facility logs
- ✓ Shift summaries
- ✓ E-mail

Traffic Flow Management Measures

Level Capping

Miles-in-Trail (MIT)

Minutes-in-Trail (MINIT)

Fix Balancing

Reroutes

Minimum Departure Interval

Ground Delay Program (GDP)

Ground Stop (GS)

Level Capping (LVLCP)

❑ Used to segregate different flows of traffic or to distribute the number of aircraft questing access to specified area.

❑ **Low Altitude Arrival Departure Routing (LAADR):** May apply to the departure or arrival phase of flight.

❑ **Tunneling:** Descending traffic prior to the normal descent point at an arrival airport to remain clear of an airspace situation on the route of flight.

❑ **Capping:** Aircraft cleared to an altitude lower than their requested altitude until clear of the constrained airspace. Often, users would rather avoid departure delays and accept other than filed altitudes.

Miles-in-Trail (MIT)

< 10 Miles

< 10 Miles

Minutes-in-Trail (MINIT)

❑ A program designed to assist in achieving a specified interval over a common point for departures.

❑ A specified time interval between aircraft generally used between Towers and the Approach control

❑ Also used for non-radar/oceanic traffic

Minimum Departure Interval (MDI)

❑ A Minimum Departure Interval (MDI) assigns departure times to achieve a constant flow of traffic over a common point. Normally this involves departures from multiple airports.

FIX Balancing (FXBAL)

❑ Assigning an aircraft a fix other than in the filed flight plan in the arrival or departure phase of flight to equitably distribute demand.

Reroutes (RERTE)

ATC routings other than the filed flight plan. They are issued to:

❑ Ensure aircraft operate with the flow of traffic.

❑ Remain clear of special use airspace.

❑ Avoid congested airspace.

❑ Avoid areas of known weather or where aircraft are deviating or refusing to fly.

Ground Delay Program (GDP)

A traffic management process whereby aircraft are held on the ground.

❑ The purpose of a GDP is to support the TM mission and limit airborne holding

> TM mission = balance air traffic demand with system capacity to ensure maximum use of the airspace system.

❑ GDPs are flexible, and can be implemented in various forms depending upon the system's needs.

❑ GDPs can provide equitable assignment of delays to all users.

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Ground Stop (GS)

❑ A process whereby an immediate constraint can be placed on system demand. The constraint can be total or partial and may be used whenever a FIR, ACC, TMA or airport experiences a significant reduction in capacity.

Using Ground Stops (GS)

TMCs determine the impact and coordinate with other FIRs as soon as possible.

Reduced airport capacity situations:

- ✓ Weather below user minimums
- ✓ Closed runways
- ✓ Aircraft accident
- ✓ Equipment failures

To preclude:

- ✓ Extended periods of airborne holding
- ✓ Sector/Center saturation or airport gridlock

Reviewing/Canceling Ground Stop

TMC review

- ✓ Scheduled demand
- ✓ Acceptance rates
- ✓ Other factors to determine the recovery potential
- ✓ Continue ongoing coordination with affected facilities
- ✓ Send message to CADENA OIS

TMC Canceling Ground Stop

- ✓ Communicate with all affected facilities to develop a plan to release ground stopped aircraft
- ✓ Send message via CADENA OIS

19:40
- ZAU receives notice of EWR traffic shut off
- ZAU has 3 EWR arrivals transiting sectors 24, 25, and 82 in next 20 minutes
- ZAU controllers also begin to hold EWR arrivals at their current altitudes (FL330, 350, and 370)
- 20 other A/C are planned to transit sectors 24, 25, and 82 at those altitudes in the next 20 minutes and are directly affected by the holding patterns

ORD departures to east and arrivals from south and east begin to be constrained
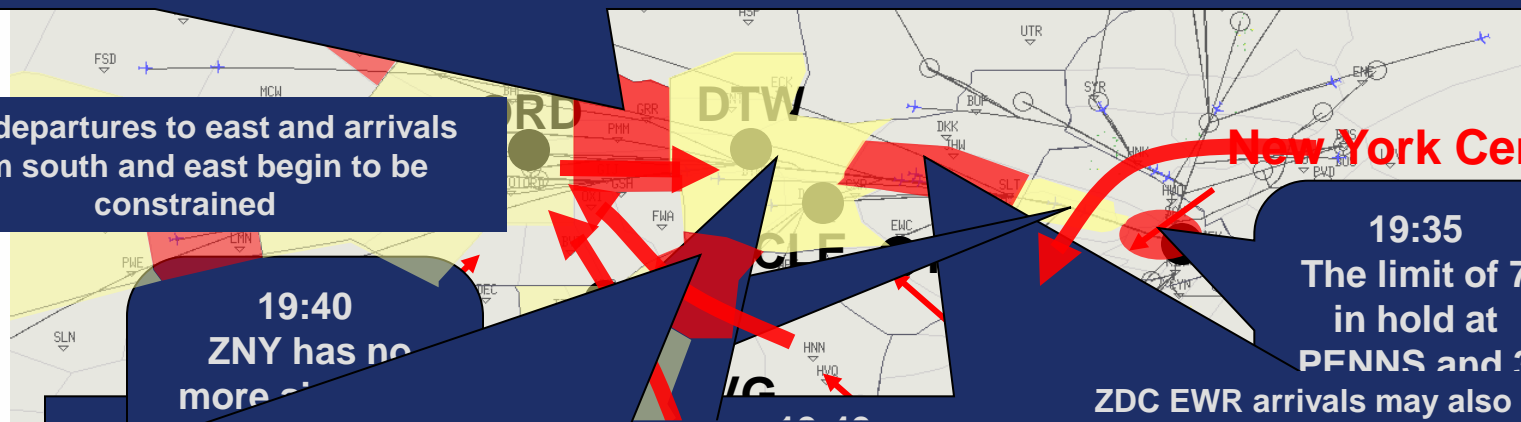
New York Center

19:40
ZNY has no more si...

19:35
The limit of 7 in hold at PENNS and 3...

ZDC EWR arrivals may also be...

19:40
- ZID receives notice of EWR traffic shut off
- ZID has 3 EWR arrivals transiting sectors 88 and 98 in next 20 minutes
- ZID controllers begin to hold EWR arrivals at their current altitudes (FL330 and 370)
- Over 20 other A/C are planned to transit sectors 88 and 98 at those altitudes in the next 20 minutes and are directly affected by the holding patterns

<< Click to play animation >>

Step 1: Exploration

Field Facility responsibilities include:

Conduct an assessment of demand versus capacity.

Gather and evaluate all data including, but not limited to, counts and lists from the traffic database, and coordination with facilities under the requesting facility's jurisdiction.

Step 2: Justification

❑ Consider internal options prior to requesting *inter*-facility initiatives

❑ Coordinate with other FIRs and provide the following:
    ❑Specific identification of the problem

    ❑*Intra*-facility actions taken or proposed.

    ❑Detailed explanation of the assistance required, including additional options available.

    ❑Identification of potential system impacts, both if enacted and if denied.

Step 3: Implementation

❑ Field facilities shall notify other facilities **under** their jurisdiction of implemented initiatives as well as their appropriate facility personnel.

Step 4: Validation

❑ TMC's should validate actual system impact and dynamically adjust measures as required.

❑ Record actual impact for use in developing future restrictions.

❑ Continually monitor the TMMs

  ❑ Frequent examination of meteorological data

  ❑ Periodic examine air traffic lists and counts

Step 5: Critique

❑ Obtain feedback from affected facilities and other ANSP areas affected by the TMM.

Step 6: Review

❑ The FIR should try to develop and maintain a restriction database for historical/statistical analysis.

❑ This database could be used to identify successful TMMs for addressing reoccurring system constraints.

The End